

CREATIVE POTENTIAL AND FANTASY  
PLAY IN YOUNG GIRLS

BY

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The purpose of this study was to examine the relationship between certain cognitive and personality variables and creative potential in preschool girls. The particular variables included in this study are fantasy play, fantasy predisposition, intelligence, and social interactions in play. The Torrance Tests of Creative Thinking were administered to 75 girls, ages four and five, in private preschools. The 30 girls who scored in the top 33% of scores on either the verbal tasks or the figural tasks were assigned to the high creative potential group. The 30 girls who scored in the bottom 50% of scores on both the verbal and figural tasks were assigned to the low creative potential group. These 60 subjects were then given an intelligence measure and a fantasy predisposition questionnaire. Each subject was also observed during eight 10-minute free-play periods and her behavior was rated for fantasy and positive social interactions with peers.

It was hypothesized that there would be a significant relationship between creative potential and the four variables: fantasy play, fantasy predisposition, intelligence, and social interactions in play. Results supported this hypothesis for the low creative group, but not for the high creative group. It was also hypothesized that the high creative group would be higher on each of these four variables than the low creative group. The results showed significant differences between the high and low creative groups on all four variables measured, with the means for the high group higher than the means for the low group. It was discussed that these results may indicate a continuous relationship between these variables and creative potential, which levels off at higher levels of creative potential.

The results were discussed with respect to the findings of previous research on creative potential in young children and suggestions for further research were made.

## CHAPTER I

### INTRODUCTION

Creative thinking includes the abilities involved in becoming aware of problems, thinking up possible solutions, and testing them. In this sense, creativity is not viewed as a "rare and particularized ability," but rather a "general ability possessed to some degree by all essentially healthy individuals" (Torrance, 1974, p. 8). In general, creativity concerns ways in which thinking must be directed in order for new and original concepts and problem solutions to emerge. With our society today facing many complex problems that are relatively unique to our time, such as the energy crisis, overpopulation, pollution of the environment, etc., creative thinking will need to be utilized in developing new and effective solutions. The abilities included in creative thinking are also useful to the individual in coping with everyday life.

Several investigators in the area, Guilford (1950), Getzels and Jackson (1962), and Torrance (1962), maintain that a significant distinction exists between creativity and the traditional concept of intelligence. Torrance (1962) defines creativity as:

the process of sensing gaps or disturbing missing elements; forming new hypotheses concerning them; testing these hypotheses and communicating the results, possibly modifying and retesting the hypotheses. (p. 16)

According to this definition, creativity involves more than what intelligence tests measure, Getzels and Jackson (1962) contrast the two in the following manner:

The one mode tends toward retaining the known, learning the predetermined, and conserving what is. The second mode tends toward revising the known, exploring the undetermined, and constructing what might be. (pp. 13-14)

Guilford (1950) proposes that there are two major thinking processes: convergent and divergent. Convergent thinking involves deciding on one right answer or a recognized best answer. Divergent thinking involves generating a variety of novel responses which may or may not overlap with those of others.

The research on creativity has focused on four major areas: (1) the product created, (2) the process of creating, (3) the nature of the creative individual, and (4) the environmental factors that influence creativity. In their review of the literature on the creative individual, Dellas and Gaier (1970) conclude that "a particular constellation of psychological traits emerges consistently in the creative individual,..." who is "distinguished more by interests, attitudes, and drives, than by intellectual abilities" (pp. 67-68). Arasteh (1968) concludes in her review of the literature on creativity in young children that due to the complexity of creativity, it is unwise to use only one measure focusing on either cognitive or personality factors. Thus, it seems that in order to study the origins and development of creativity, it is necessary to consider the development of cognitive and personality characteristics.



One possible origin of the development of thinking abilities and personality traits related to creativity in young children is play, particularly make-believe play. Throughout early childhood, play consumes a major portion of the child's time. Thus, it is likely that the child's many experiences during play greatly affect his development of cognitive and social skills and his unique pattern of personality traits. There is a general agreement among the investigators who have studied play that it is best subdivided into (1) play built around the mastery of physical feats or of verbal or perceptual tasks, (2) play that requires the generation of imagery and involves pretend elements, and (3) games with rules which involve social relationships and regulations imposed by the group. Although all three types of play are important in the child's development, it seems that the skills that are developed in make-believe play, such as the ability to fantasize, to withdraw from and add to the immediate characteristics of the environment, are particularly relevant to the development of creative thinking abilities.

Several theories in the areas of play and creativity (Freud, 1908; Greenacre, 1959; Rogers, 1959; Piaget, 1962; Klinger, 1969) have hypothesized a connection between play and the development of creativity in children. For Piaget (1962), play derives from the child's working out the two fundamental processes involved in his development: accommodation and assimilation. Assimilation is the attempt to integrate external sensations or experiences into the relatively limited number of schemata available to the child at a particular age. Accommodation is the outgoing, adjusting process of reaching out to the environment, so that preexisting schemata are

changed to cope with new information or situations. According to Piaget (1962), imitation involves the child's attempts to accommodate to the environment, whereas play is primarily associated with the assimilation process. He further suggests that symbolic or make-believe play is a "source of creative imagination" (p. 155). Through symbolic play the child subjects objects to his own activity, without rules or limitations, and is able to form relationships and associations among objects and ideas which are typically unrelated. It is this ability to combine elements into novel associations in order to produce a unique idea or object that is related to creativity.

Gardner (1973) theorized a connection between both symbolic processes and play and artistic creativity. He wrote that the use of symbols and symbolic systems is an important developmental event for the evolution of the artistic process. He saw play as a necessary antecedent to art, but different from art in that play is often performed purely for its own sake and no product results. He describes art as "a goal-directed form of play" (p. 166), which results in a kind of communication to others. The purpose of this study is to examine the relationship of fantasy in play to the development of creativity in young children.

#### Research on Creativity in Children

The research on creativity in children has focused primarily on (1) the relationship of creativity to intelligence measures, (2) the development of creativity in preschool and elementary-school children, (3) the personality of the creative child, and (4) parent-child relationships affecting creativity.

### Creativity and Intelligence

There have been many studies conducted to examine the relationship between creativity and intelligence. These studies have typically shown the relationship to be low to nonexistent. Getzels and Jackson (1962), in a study of highly gifted adolescents, found a correlation of .30 between IQ and creativity measures. Torrance (1962) obtained similar results with elementary-school children, the correlations between his creativity tests and various intelligence tests ranging from .16 to .32. These findings were confirmed by Iscoe and Pierce-Jones (1964), who obtained correlations of .25 and .28 between Torrance's Unusual Uses Test and the WISC for Negro and white elementary-school children. A correlation of .30 was found by Yamamoto (1964) between Lorge-Thronrdike scores and Torrance Tests of Creativity scores for creative adolescents. Flescher (1963) reported the average correlation of seven creativity instruments with California Test of Mental Maturity scores was .04 for his sample of 110 sixth graders.

Wallach and Kogan (1965) criticized the findings of these cited studies and others and concluded that few demonstrated both high intercorrelations of the creativity measures and low intercorrelations of the creativity measures with intelligence measures. They attributed these failures to the presence of time pressure, evaluation pressure, or both. Therefore, in their study of fifth-grade children, the creative tasks were treated as "games," in which each child was tested individually under no time limits (Wallach and Kogan, 1965). Their creative test battery included both verbal and visual tasks and was scored for originality and productivity.

They found high intercorrelations between their creativity measures (.50) and a low correlation between overall creativity and intelligence (.10).

The research on the relationship between creativity and IQ in children has consistently shown low to moderate correlation between the two. Barron and Harrington (1981) concluded that the findings in the last 15 years have tended to confirm that there is a curvilinear relationship between intelligence and creativity, with intelligence presumably becoming less and less influential as one moves into higher levels of creativity.

#### Development of Creativity in Preschool Children

There have been relatively few studies of creativity in preschool-age children. The studies that have been conducted with this age group have varied greatly in the types of creativity measures used. Andrews (1930) used responses to incomplete objects presented on a tachistoscope, Grippen (1933) used children's paintings and their verbalizations while painting, Griffiths (1945) used children's drawings and responses to inkblots, and Markey (1935) used block building and doll play.

Andrews (1930) concluded that total imaginative scores are at a peak between the ages of 4 years and 4 years - 6 months, with a decline at age 5 when the child enters kindergarten. Grippen (1933) stated that creative imagination did not occur below the age of 5. However, the test situation relied heavily on verbal ability, which could have affected the results. Griffiths (1945) identified 11 stages in the creative drawings of children, proceeding from undifferentiated scribble to the development of a theme in the

drawing. Of Griffiths' 55 5-year-old subjects, 16 were responsible for 90% of the creative responses. Markey's (1935) findings indicated an absence of imaginative play in children below the age of 2, and a low level before the age of 3, followed by a rise of imagination associated with play.

More recently, Starkweather (1964, 1971) has proposed that such attributes as nonconformity, curiosity, fluency of response, and freedom of expression be used to identify young children who are potentially creative. Quattrochi (1974) used Starkweather's method of measuring creativity in preschool children and found that creative potential is a characteristic that can be recognized even in 3- and 4-year-olds. Other investigators (Singer and Rummo, 1973; Ward, 1966; Biller, Singer and Fullerton, 1969) have used Wallach and Kogan's method of assessing creativity in preschool children and Dreyer and Wells (1966) used Torrance's Tests of Creative Thinking in their study of creativity in 4- and 5-year-olds.

#### Development of Creativity in Elementary-School Children

Most of the research on creativity in elementary-school children has been conducted by Torrance and his associates, who have administered the Torrance Tests of Creative Thinking to several thousand school children. These tests include both verbal and nonverbal aspects and can be scored for such factors as originality, flexibility, fluency, and problem sensitivity (Torrance, 1974). Torrance (1961) has reported sex and age trends which are already evident in the early grades. He has found that there is a drop at age 5 for almost all creative thinking abilities, as the child meets

demands for acceptance of authority outside the home. Another drop occurs at age 9, when the child is concerned about peer approval; again at age 13 at the onset of adolescence; and again at age 17 (Torrance, 1961). In a longitudinal study of the "fourth grade slump," Torrance (1968) administered the Torrance Tests to children in grades three, four, and five. He found a significant drop on all variables between the third and fourth grades and from 45 to 61% of the children exhibited this drop. He also found a general recovery trend in the fifth grade. In a study of intellectually gifted second through sixth graders at a school for the gifted, Houtz, Rosenfield, and Tetenbaum (1978) found that a "plateau" appeared on the creativity tasks from the fourth grade on. This was not a decline in creative performance, but a "slow down" in the growth of creative skills.

Torrance and Aliotti (1969) reported that few sex differences have been found below the fourth grade. However, in their study of fifth-grade children, they found that girls excelled boys on all the verbal tests, but boys excelled girls on figural flexibility and originality.

Sex and age differences have also been reported in cross-cultural studies (Coone, 1969; Ogletree, 1971). Coone administered the Torrance Tests to children in grades one through six in Australia and India. He found that in all samples, males scored higher on figural originality than females. Although there was a tendency for males and females in the United States to drop in scores between grades three and four, the children in the other samples gained at that level. Ogletree (1971) examined the

creativity scores on the Torrance Tests of children, grades three through six, in public and private schools in England, Scotland, and Germany. He found that girls excelled boys on all of the creativity measures and there was a positive relationship between age and creativity scores.

Williams, Teubner, and Harlow (1973) administered the Torrance Tests to rural, urban, and Indian children in the fourth grade. They found significant differences for the verbal measures, but not the figural measures. Scores on the verbal tasks occurred in the following order from high to low: rural, middle-income urban, lower-income urban, lower-income Indian, and impoverished Indian. Richmond and Norton (1973) examined creativity scores of disadvantaged children in grades four through seven. Based on scores on the Torrance Tests they found that the disadvantaged children scored lower than the norms on all of the verbal factors, but higher than the norms on figural fluency.

Although the research is not conclusive, it appears that scores on the Torrance Tests of Creative Thinking are affected by age, sex, socioeconomic level, and culture.

#### Personality of the Creative Child

A major question in the area of creativity is how similar are personality traits in young creatives to those of creative adults. Some of the characteristics found in creative adults include self-confidence, flexibility, assertiveness, little concern with social restraints or other's opinions, independence, sensitivity, and introversion (MacKinnon, 1962; Drevdahl and Cattell, 1958; Roe, 1953). It also appears that the blending of feminine and masculine

traits is conducive to creativeness. Several investigators have found evidence of a feminine pattern in creative males and a masculine pattern in creative females (Hammer, 1964; MacKinnon, 1962; Helson, 1966 and 1967). In their review of the literature of the last 15 years, Barron and Harrington (1981) found a stable set of core characteristics of creative people including high valuation of esthetic qualities in experiences, broad interests, attraction to complexity, high energy, independence of judgment, autonomy, intuition, and self-confidence.

Similar findings have been obtained in studies of adolescents and elementary-school children. Reid, King and Wickmire (1959) found that creative seventh graders were less anxious, more sociable and warmhearted than their noncreative peers. Datta and Parloff (1967) and Cashdon and Welsh (1966) found their creatively talented adolescents to be self-assured, assertive, and independent. In their study of elementary-school children, Weisberg and Springer (1961) concluded that the creative children exhibited a stronger self-image, more humor, and an uneven ego development. In the Wallach and Kogan (1965) study, children high in both creativity and intelligence as compared to the other children were more self-confident and were sought out more by their peers. Cacha (1976) found that fifth-grade children high in figural creativity were warmhearted, emotionally stable, happy-go-lucky, socially bold, relaxed, and extroverted. Houtz, Rosenfield, and Tetenbaum (1978) found that in intellectually gifted children, grades two through six, internal locus of control and self-esteem were positively related to creative problem solving skills. In her study of kindergarten children, Lieberman (1965)



found that the creative children were more playful as related to spontaneity, joy, and humor. Generally, the research shows that there are several personality traits that are characteristic of creative children and that these are similar, but not identical, to the ones found in creative adults.

#### Family Influences on Creativity

Much of the information on the relationship of family variables and the development of creativity has come from retrospective reports of talented adults. Several investigators found that creative adults reported having been allowed unusual freedom in making decisions and in exploring the environment as children (Roe, 1953; MacKinnon, 1962; Drevdahl, 1964). In their studies with highly creative and intelligent adolescents, Holland (1961), Getzels and Jackson (1962), Nichols (1964), and Datta and Parloff (1967) found that the parents were less authoritarian and more nurturant and accepting of the child's ideas and impulses than the parents of their less creative peers.

In their study of elementary-school children, Weisberg and Springer (1961) found that the high creative children came from homes where the parents accepted regression in the child and did not stress conformity to parental values. Watson (1957) found that children from the most permissive families were rated as more spontaneous, original, and creative. However, Orinstein (1962) obtained contradictory findings. There was no evidence of a positive relationship between parental permissiveness and creativity in second-graders. Dreyer and Wells (1966), in a study of 4- and 5-year-olds, found that mothers of the high creative children allowed decision

making and freedom of social exploration at an early age. Balagtas (1969) and Bishop and Chace (1971) obtained similar results with their preschool children; democratic attitudes and autonomy given the child were positively related to creativity. Thus, the research is fairly consistent in showing that permissiveness, independence and autonomy granted, and acceptance of the child are conducive to the development of creativity.

#### Research on Play and Creativity

There have been relatively few studies dealing directly with the relationship of play and creative abilities in children.

Lieberman (1965) attempted to identify and rate the qualities of playfulness to the divergent thinking processes of ideational fluency, spontaneous flexibility, and originality. She hypothesized that playfulness could be conceptualized and operationally defined in terms of five traits: physical, social, and cognitive spontaneity, manifest joy, and sense of humor. She also hypothesized that the more playful children would perform better on divergent thinking tasks than the less playful children. The subjects were 93 kindergarten children who were rated on the five traits on a 5-point scale by the teachers. They were also given three divergent thinking tasks which were scored for fluency, flexibility, and originality. These were (1) product improvement in which the child is asked to suggest ideas of how to make a toy dog and a doll more fun to play with, (2) supply names for illustrated stories, and (3) list names of animals, food, and toys. A factor analysis of the playfulness traits showed that four of the five had loadings on the first centroid factor in the middle 80's. Physical spontaneity had a loading

in the high 70's. She also found that each of the playfulness traits and the global playfulness score correlated significantly with fluency, flexibility, and originality.

Sutton-Smith (1967) hypothesized that children would exhibit a greater ideational fluency for those toys with which they had played a great deal than for those with which they had played less. He also felt that boys and girls would show greater ideational fluency for objects for their own sex than for the opposite sex. The subjects were nine boys and nine girls in kindergarten. Like and opposite sex toys were chosen that were familiar to all the children. The girl's toys were dolls and dishes and the boy's toys were trucks and blocks. Each child was interviewed individually and asked for each toy, "What is it like?" and "What can you do with it?" The results showed that the sexes did not differ in their descriptions of the four toys. The sexes did differ, however, in the total number of usages and the number of unique usages for the toys. They were able to give a greater number of usages and more unique usages for the like sex toys. Sutton-Smith concluded from these results that responses developed in play may be put to use in other situations when there is a demand.

Bishop and Chace (1971) were interested in the relationship of the home play environment and potential creativity in children. They gave two questionnaires to the mothers of 72 3- and 4-year-old children asking opinions and attitudes regarding various play situations, types of toys, rights of children in play, and relations of children and parents in play. They found that children of mothers who reported attitudes toward play suggesting flexibility,

exploration, and autonomy of the child were judged as more creative by their performance on a task requiring them to make anything they wanted with geometric figures. Their designs were judged as creative based on the amount of complexity and variation.

Dansky and Silverman (1973) hypothesized that an increased opportunity to engage in playful activity would result in similar increases in associative fluency. The subjects were 90 children attending a nursery school. They were randomly assigned to three treatment conditions: (1) play -- 10 minutes of free play with materials, (2) imitation -- the child watched the experimenter perform four tasks with the same materials used in treatment 1 and was then instructed to repeat the actions, and (3) control -- the child was given a box of crayons and four pictures to color for 10 minutes. Immediately following treatment each subject was given an Alternate Uses Test for the four objects previously used in the play and imitation conditions. The responses were judged as standard or nonstandard by two judges. The results showed that the children in the play condition produced significantly more nonstandard responses for every object than children in the imitation or control conditions.

In a later study, Dansky (1980) further examined the relationship of play and associative fluency and hypothesized that it is make-believe which mediates this relationship. He predicted that children who displayed make-believe in natural free-play situations would also engage in make-believe during experimental free-play situations and that experimental opportunities for free play would enhance fluency for make-believe players, but not for those who did not exhibit make-believe play. The subjects were 96 preschool

children who had been designated as players (those who displayed make-believe during more than 25% of the time) and nonplayers (those who spent less than 5% of their time in make-believe) in natural free-play settings. One week after completing the free-play observations, all children were seen in pairs and exposed to the same stimulus materials for 10 minutes. Free-play subjects were allowed to play with the objects as they wished. Imitation subjects observed and then imitated the experimenter's actions with the objects. Convergent problem-solving subjects attempted to solve problems involving the objects. Immediately after the treatment sessions, all children were individually asked to name all the uses they could for four objects that were not present during the treatment sessions. Dansky's results supported his first prediction. During the experimental free-play sessions, 88% of the players engaged in make-believe, while only 6% of the nonplayers did so. He also found that free play enhanced associative fluency, but only for players who actually engaged in make-believe, thus supporting his second prediction.

Feitelson and Ross (1973) attempted in their study to show a relationship between creativity and symbolic play. They hypothesized that teaching young children to play thematically is one way to increase their creativity. The subjects were 24 white children from a private kindergarten. Each child was observed at free play in a standardized situation set up in a mobile laboratory for 40 minutes and rated on an 11-point scale by the three judges for level of symbolic play. The children were also given three subtests of the Cincinnati Autonomy Test Battery (CATB) designed to measure curiosity, exploratory behavior, and innovative behavior, and the

picture completion subtest of the Torrance Tests of Creative Thinking. After the pre-testing the children were randomly assigned to four treatment groups: (1) children were given 10 30-minute play-tutoring sessions with the aim of teaching them to play more symbolically, (2) children were given 10 30-minute free-play sessions with toys--the adult observer did not offer guidance, (3) children were given same sessions focusing on learning to play the tonette, and (4) classroom only situation with no intervention. After treatment the children were again observed in 40 minutes of free play and reassessed on the CATB and Torrance Tests. No differences existed between the four groups prior to treatment. After treatment the play-tutoring group showed an increase in level of symbolic play, but no changes occurred for the other three groups. The play-tutoring group also showed a greater increase in scores on the creativity measures than the other three groups. Thus, Feitelson and Ross concluded that their hypotheses had been confirmed.

Johnson (1976) examined the relationship between fantasy play and cognitive functioning in disadvantaged preschool children. The subjects were 27 boys and 36 girls ranging in age from 3 to 5 years from lower and lower-middle class backgrounds. They attended a pre-school in a poverty area of Detroit. Divergent thinking was assessed by a uses task, in which the children were asked to name all the uses they could for a towel, a string, and a cup, and a story completion task, which required the children to finish two incomplete stories. The uses task was scored for frequency of common uses and frequency of fanciful uses. The stories were scored for number of nonrepetitious statements and gestures. The children were also

observed for 10 5-minute samples of play behavior during free play at nursery school. The play was rated as nonfantasy, social fantasy, or nonsocial fantasy play. The results showed that social fantasy play, but not nonsocial fantasy play, was significantly related to measures of divergent thinking. Johnson attempted to explain this finding by hypothesizing that social fantasy play requires greater cognitive maturity than does solitary fantasy play, in that it requires communication of private symbolism, as does the divergent thinking tasks.

Hershey and Kearns (1979) hypothesized that students who participated in sessions of relaxation and guided fantasy exercises would produce higher fluency, flexibility, and originality scores on the Torrance Tests of Creative Thinking than students who participated in arithmetical exercises during concurrent sessions. The subjects were 51 fourth, fifth, and sixth grade students from self-contained classrooms for the gifted. The Verbal form of the Torrance Tests was used to assess creative thinking ability. The subjects were randomly assigned to two groups. One group took part in eight weekly half hour relaxation and guided fantasy sessions while the other group took part in eight weekly half hour arithmetical exercise sessions. The results showed that the students who were exposed to a total of four hours of guided fantasy in eight weekly sessions scored significantly higher on tests of divergent thinking than did their randomly assigned counterparts who were exposed to four hours of arithmetical exercises. Hershey and Kearns speculated that an extension of the relatively short time spent in fantasy exercises would result in further positive effects on the creative process.

Of these few studies that have dealt with the relationship of play and creativity, only three, Feitelson and Ross (1973), Johnson (1976), and Dansky (1980), were concerned with the make-believe aspect of play. Two of the studies, Sutton-Smith (1967) and Dansky and Silverman (1973), did not specify what was meant by play, other than amount of time spent with certain toys. Lieberman (1965) and Bishop and Chace (1971) were concerned with playfulness, but it is not clear how similar are their conceptualizations of the term. Hershey and Kearns (1979) were interested in the relationship of fantasy and creativity, but did not examine fantasy in play, rather fantasy in guided exercises.

The studies also varied with respect to the measures of creativity used. Sutton-Smith (1967), Dansky and Silverman (1973), and Dansky (1980) were concerned primarily with ideational fluency as an aspect of creative thinking. Johnson (1976) used frequency of uses and frequency of fanciful uses of common objects as a measure of divergent thinking. The measure of creativity used by Bishop and Chace (1971) differs greatly from the usual, standardized measures for creativity. Lieberman (1965) and Hershey and Kearns (1979) measured fluency, flexibility, and originality as aspects of creative thinking. Thus, the relatively small amount of research on play and creativity is not consistent with respect to the definition or measurement of variables studied.

#### Imaginative Predisposition in Children

Other studies have focused predominantly on individual differences in imaginative predisposition and fantasy in play. These focus on the question, is it possible to discern specific children



who display a predominance of imaginative play at an early age and persist in this pattern? If these individual differences exist, what are the psychological consequences?

Two retrospective studies have shown a relationship between creativity and imaginativeness in childhood. Schaefer (1969) found that high-school students judged as creative by their teachers in terms of demonstrated creative performance did not differ in intellectual skill, but primarily in their report of having had an imaginary companion or make-believe playmate during childhood. Helson (1965) found similar results in her study of artistic creativity in college women. One of the few characteristics differentiating the creative group from the others was that they more frequently reported having engaged extensively in daydreaming as a child.

Singer (1961) felt that a behavioral consequence of a high fantasy predisposition in children would be an ability to wait for longer periods of time than children low in fantasy predisposition. The subjects, 40 children between the ages of 6 and 9 attending a small private school, were divided at the median into high and low fantasy groups on the basis of their responses to the four questions devised by Singer concerning fantasy activities. Each child was asked to cooperate in a situation calling for him or her to remain quietly in one spot as long as possible. The child's score was the length of time in seconds he sat or stood quietly in place before signalling that he could not continue. The results revealed that high fantasy children were able to remain seated or standing quietly for significantly longer time periods before giving up than the low fantasy children. Interviewed afterwards, these children reported that they had helped pass the time by engaging in fantasy activities.

Pulaski (1973) hypothesized that minimally structured materials, such as blocks, clay, or simple rag dolls, would stimulate children's fantasy more than extremely realistic toys. She also felt that high fantasy children would play longer and exhibit more fantasy with both types of materials than the low fantasy children. She measured fantasy predisposition with the Barron Movement Threshold Inkblots, Singer's structured interview, and rating a child's story about his drawing for amount of fantasy. The subjects were 70 children in kindergarten, first, and second grade. Each child was allowed two 15-minute sessions with each of the two sets of toys, and this play was judged as imaginative or not. Pulaski found that more fantasy play occurred with the minimally structured toys than with the highly structured toys and that the high fantasy children played more imaginatively with both types of toys than the low fantasy children.

Kuziemski (1977) looked at the relationships among imaginative play predisposition, creative thinking, and reflectivity-impulsivity. The subjects were 50 second-grade children in public schools. These children had average IQ scores and were from middle-income families. He measured imaginative play predisposition using Singer's imaginative play interview, creative thinking using the Alternate Uses Test, and reflectivity-impulsivity using the Matching Familiar Figures Test. The results showed that imaginative play predisposition and creative thinking were significantly positively correlated. However, reflectivity-impulsivity was not significantly related to imaginative play predisposition or creative thinking. Kuziemski concluded that his results supported theoretical views which propose a close relationship between imaginative play and creative thinking.

These studies seem to indicate that there are individual differences between children in their fantasy predisposition and that there are psychological and behavioral correlates of this predisposition.

#### Summary of Research Findings

While much research has been done on the development of creativity in children, most of it has focused on elementary-school children and adolescents. The studies involving preschool children have mostly been concerned with the identification and measurement of creative potential and other cognitive and personality factors at the preschool level.

Although several theorists (Freud, 1908; Greenacre, 1959; Rogers, 1959; Piaget, 1962; Klinger, 1969) have suggested that a positive relationship exists between play and the development of creativity in children, relatively few studies have examined this relationship. It is a goal of this study to help clarify the connection between play, in particular fantasy play, and creative potential in preschool children.

#### Purpose of Research and Hypotheses

The purpose of this study is to examine the relationship of fantasy play, fantasy predisposition, intelligence, and social interactions in play, to creative potential in preschool girls.

The following hypotheses were tested:

1. There is a linear relationship between creative potential and the four variables (1) fantasy play, (2) fantasy predisposition, (3) intelligence, and (4) social interactions in play.
2. The relative importance of the predictor variables in influencing creative potential is (1) fantasy play, (2) fantasy predisposition, (3) social interactions in play, and (4) intelligence.

3. The children high in creative potential will exhibit more fantasy in their play than children low in creative potential.
4. The children high in creative potential will score higher on Singer's fantasy predisposition questionnaire than children low in creative potential.
5. The children high in creative potential will score higher on the intelligence measure than children low in creative potential.
6. The children high in creative potential will exhibit more positive social interactions with their peers during play than children low in creative potential.
7. A significant number of individuals will be correctly classified into either the high verbal-high figural group or the low verbal-low figural group, based on their intelligence, fantasy play, and social interaction scores.

## CHAPTER II

### METHOD

#### Subjects

The subjects of this study were 4- and 5-year-old girls attending six private preschools with comparable tuitions and predominantly middle-class white populations. All of the 4- and 5-year-old girls in these preschools were screened for inclusion in the study through the administration of the Torrance Tests of Creative Thinking. The 30 girls who scored in the high range of scores and the 30 girls who scored in the low range of scores were included in the remainder of the study. The mean age of these 60 girls was 5 years - 6 months, with 80% of the subjects white and 20% black. The IQ estimates of these subjects ranged from 82 to 144, with a mean score of 117.

#### Measuring Instruments

##### Measures of Creative Potential

The measures of creative potential used in this study were three verbal tasks and three figural tasks of the Torrance Tests of Creative Thinking. The Torrance Tests of Creative Thinking include tasks designed to measure such factors as originality, flexibility, fluency, and elaboration. The particular tasks used in this study were chosen on the basis of Torrance's priority and the suitability for use with young children. These tasks were administered individually to each of the children by the experimenter. These were given in a series of

30-minute sessions until they were completed, usually one session for the verbal tasks and one session for the figural tasks. Every effort was made to keep these sessions relaxed and pleasant and to give the tasks a game-like quality so that the child did not feel pressured to perform "well."

The three verbal activities are Product Improvement, Just Suppose, and Unusual Uses. In the Product Improvement activity the child is handed a stuffed toy elephant and is asked to think of as many ways as she can to make it more fun to play with. The Just Suppose activity requires the child to think of the varied possible results of an improbable event. The children are asked, "Just suppose clouds had strings attached to them which hang down to earth. What would happen?" The Unusual Uses activity requires the child to think of different uses for a cardboard box. Each verbal task was scored for fluency (number of ideas), flexibility (number of different categories into which the responses fall), and originality (relative infrequency of the idea). A scoring guide is provided which gives detailed instruction as to how to score each task. Torrance (1974) cites interrater reliability between experienced and inexperienced scorers for the verbal form of fluency, .99, flexibility, .94, and originality, .98. Each child was given a total verbal creative potential score.

The three figural activities are Picture Completion, Incomplete Figures, and Repeated Figures. The Picture Completion activity requires the child to think of a picture in which the tear drop shape made of colored paper with an adhesive backing is an integral part. The child

is asked to try to think of something no one else will produce and to add ideas that will make the picture tell as interesting a story as possible. Thus, it is scored for originality and elaboration. In the Incomplete Figures Activity the child is asked to complete ten incomplete figures in order to make interesting objects or pictures. This activity is scored for fluency, flexibility, originality, and elaboration. The Repeated Figures activity is similar to the Incomplete Figures activity. However, the stimulus figures are 30 sets of parallel lines. Again the child is asked to make pictures from the pairs of straight lines. This activity is also scored for fluency, flexibility, originality, and elaboration. A scoring guide is also provided for the figural form. Torrance (1974) cites interrater reliability between experienced and inexperienced scorers for the figural form as fluency, .98, flexibility, .98, originality, .86, and elaboration, .92. Each child was given a total figural creative potential score.

#### Measure of Fantasy Predisposition

Individual differences in fantasy predisposition were measured by an interview with the children about their play behavior. A structured interview consisting of four questions was designed by Singer (1973) to obtain information about the child's make-believe play. The four questions are

1. What is your favorite game? What do you like to play the most?
2. What game do you like to play best when you are all alone? What do you like to do best when you are all alone?
3. Do you ever have pictures in your head? Do you ever see make-believe things with pictures in your head or think about them? What sort of things?

4. Do you have a make-believe friend? Do you have an animal or toy or make-believe person you talk to or take along with you? Did you ever have one, even though you don't anymore? (Singer, 1973, p. 59)

Each question is scored 0 or 1, depending on the indication of a degree of fantasy in the answer. Therefore, a child could score from 0 to 4 on this questionnaire.

#### Fantasy Measure

Individual differences in fantasy level were measured by direct observations of the children during play. Six observers were trained before the study to record in detail the children's play behavior. These observers observed the children during regular and routine periods set aside for free play. Each child was observed eight times for a period of 10 minutes each. The observer wrote objective statements of the child's behavior and verbalizations without interpretations and marked off each 1-minute interval with the help of a stopwatch. Two independent judges examined each written record and scored each minute of the record as 1 or 0 depending on the presence or absence of fantasy activity in the child's play. Each child's fantasy score could range from 0 to 80. The raters were trained to rate as fantasy activity, behavior or verbalizations which indicate that the child is attributing properties or attributes to objects or situations which are not given in the immediate environment. Examples of fantasy in play would be pretending to be an animal, using an object as if it were something else, animating toys, and assigning or adopting roles.



### Social Interaction Measure

Social interactions with peers were examined through the direct observations of specific behaviors of the children during the free-play situation. The two raters rated the written records of the children's play sessions for positive social interactions in the same manner that they rated fantasy. Thus, each minute of the record was given a score of 1 or 0 according to the presence or absence of a positive interaction with another child. The social interaction score could range from 0 to 80. A verbal or behavioral gesture toward another child was scored as a social interaction. A positive interaction included speaking to another child, sharing toys with another child, engaging in role playing together, etc.

### Intelligence Measure

A short form of the Wechsler Preschool and Primary Scale of Intelligence (WPPSI) was used to estimate each child's intellectual level. This form consists of the four subtests that correlate best with Full Scale IQ: Information, Similarities, Arithmetic, and Comprehension. From these four scores a Full Scale IQ score was estimated.

### Summary of Variables

The independent variable in this study is creative potential as measured by the Torrance Tests of Creative Thinking. Based on this measure, high and low creative groups were formed. The four predictor variables, fantasy in play, intelligence, amount of positive social interactions in play, and fantasy predisposition, as measured by Singer's questionnaire, were selected to determine their effectiveness in discriminating between the high and low creative groups.

Procedure

A pilot study was conducted before the primary study in order to train the six observers and to establish the reliability of the two raters. This pilot study lasted approximately two weeks. An interrater reliability of 93% was achieved for rating the fantasy and social interactions present in the written records of the children's play. During this time the observers received training and practice in writing objective observations of the children during free play.

Following the pilot study, the high and low creative groups were established through the administration of the Torrance tasks. These tasks were administered by the author to each girl individually in a private part of the child's school. This was done in two separate sessions of about 30 minutes each. Those children whose scores fell in the top 33% of the range of scores on either the verbal or figural creative potential measures were included in the high creative group. Those children whose scores fell in the bottom 50% of scores on both the verbal and figural creative potential measures were included in the low creative group. The range of scores for the low group was increased to 50% instead of 33% because the subjects had to score low on both the verbal and figural measures, whereas they only had to score high on one of the measures to be included in the high group. A total of 75 girls were tested until there were 30 in both the high and low groups.

These 60 girls were then administered the short form of the WPPSI and the fantasy predisposition questionnaire individually by the author in one session, which lasted approximately 30 minutes.

This session also occurred in a private section of the school, without distractions from other children.

Each girl was then observed during regular free-play periods which occurred outside on the playgrounds of each preschool. These free-play periods were usually in the mornings at each preschool. Each playground was approximately 15,000 square feet and included play equipment, such as swings, slides, jungle gyms, and merry-go-rounds. There was plenty of room for the children to run and to carry on several separate activities. There were usually about 20 children on the playground at a time. During these times there was a teacher present, who maintained a passive attitude toward the children's activities unless aggressive behavior occurred. These observations were in the spring and summer of the year, so the children were able to go outside almost every day unless it was raining. The six observers, who were all female, observed 10 children each during eight free-play sessions on eight separate days and recorded their behaviors in detail. The observers did not know to which group the children belonged. The observers stated that a few of the children were conscious of their presence at first and asked if the observers were writing down what they were doing. However, most of the children seemed to forget about the observers and continued with their play. It was usually evident what the child was playing through her actions and verbalizations, but if the observer was not sure, she would ask the child "What are you doing?"

Two independent judges, who had never seen the subjects, rated these records to obtain a fantasy score and a social interaction score for each child, as described in the section on measuring instruments. The few differences in ratings were resolved through discussion.

## CHAPTER III

### RESULTS

The relationship of the independent variables, IQ, fantasy in play, social interaction, and fantasy predisposition, to creative potential was analyzed using two multiple regressions: one for the high creative group and one for the low creative group. The multiple regression of the high creative group showed no significant relationship between creative potential and the set of independent variables. The multiple regression of the low creative group showed a significant relationship, with the independent variables accounting for 42% of the variation in creative potential. A stepwise regression of the low creative group indicated that fantasy predisposition was the most influential variable and social interaction the second most influential variable on creative potential, with fantasy predisposition alone accounting for 31% of the variation and fantasy predisposition and social interaction combined accounting for 38% of the variation in creative potential. The other variables did not meet the .15 significance level to be included in the model.

Comparisons were then made between the high creative and low creative groups for each of the independent variables using t tests. Table I indicates that there were significant differences between the high and low creative groups on IQ ( $p < .02$ ), fantasy in play

TABLE I  
A COMPARISON OF HIGH AND LOW CREATIVE GROUPS  
ON THE INDEPENDENT VARIABLES

Group	N	IQ		Fantasy Play		Fantasy Predis.		Social Interac.	
		$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD
High	30	120.50	11.64	20.53	11.23	2.33	.92	38.83	13.33
Low	30	113.13	10.71	8.43	6.45	1.40	.86	30.37	10.16
Deg. of Freedom			58		58		58		58
t Value			2.54*		5.08**		4.02**		2.75**

\* $p < .02$

\*\* $p < .01$

( $p < .01$ ), fantasy predisposition ( $p < .01$ ), and social interaction ( $p < .01$ ), with the means of the high creative group higher than the means of the low creative group for each variable. Table II shows the distribution of the IQ scores for the high and low creative groups.

The rankings of the subjects for each independent variable are shown in Tables III, IV, V, and VI. With regard to IQ, 10 subjects in the low creative group were ranked in the top 30 scores and 10 subjects in the high creative group were ranked in the bottom 30 scores. With regard to fantasy play, eight subjects in the low creative group were ranked in the top 30 scores and eight subjects in the high creative group were ranked in the bottom 30 scores. With regard to fantasy predisposition, five subjects in the low creative group were ranked in the top 30 scores and five subjects in the high creative group were ranked in the bottom 30 scores. With regard to social interaction, nine subjects in the low creative group were ranked in the top 30 scores and nine subjects in the high creative group were ranked in the bottom 30 scores.

The intercorrelations were also computed for the variables of the high creative group and the variables of the low creative group. Tables VII and VIII present the correlations, which are Pearson  $r$ 's. In the high group the only significant correlations are between social interaction and IQ ( $p < .02$ ) and between social interaction and fantasy play ( $p < .01$ ). These are both in the positive direction. In the low group, all of the independent variables, except IQ, have significant positive correlations with creative potential. Fantasy play also has a significant positive correlation with both fantasy predisposition ( $p < .01$ ) and social interaction ( $p < .02$ ).

TABLE II

DISTRIBUTION OF IQ SCORES FOR THE LOW AND HIGH  
CREATIVE GROUPS

<u>High Creative Group</u>	<u>Low Creative Group</u>
144	130
135	129
135	129
132	126
130	122
129	122
129	120
129	120
125	119
125	119
125	119
125	119
125	118
122	116
122	115
120	114
120	112
119	112
119	110
119	110
117	110
116	110
114	107
114	107
112	104
111	101
110	100
110	92
100	92
82	90

TABLE III

RANKINGS OF SUBJECTS IN IQ

Subj. #	IQ Score	Ranking	Creat. Group
029	144	1	H
018	135	2½	H
024	135	2½	H
007	132	4	H
015	130	5½	H
036	130	5½	L
001	129	9	H
002	129	9	H
008	129	9	H
050	129	9	L
057	129	9	L
056	126	12	L
004	125	15	H
010	125	15	H
013	125	15	H
017	125	15	H
026	125	15	H
012	122	19½	H
027	122	19½	H
037	122	19½	L
058	122	19½	L
016	120	23½	H
020	120	23½	H
034	120	23½	L
046	120	23½	L
003	119	29	L
009	119	29	H
022	119	29	H
032	119	29	L
040	119	29	L
042	119	29	L
055	119	29	L
043	118	33	L
011	117	34	H
023	116	35½	H
035	116	35½	H
041	115	37	L
033	114	39	L
005	114	39	H
006	114	39	H
028	112	42	H
031	112	42	L
047	112	42	L
021	111	44	H
014	110	47½	H
030	110	47½	H
044	110	47½	L



TABLE III continued

<u>Subj. #</u>	<u>IQ Score</u>	<u>Ranking</u>	<u>Creat. Group</u>
048	110	47½	L
049	110	47½	L
054	110	47½	L
039	107	51½	L
045	107	51½	L
053	104	53	L
051	101	54	L
019	100	55½	H
059	100	55½	L
038	92	57½	L
060	92	57½	L
052	90	59	L
025	82	60	H

TABLE IV  
RANKINGS OF SUBJECTS IN FANTASY  
PLAY

<u>Subj. #</u>	<u>Fantasy Play Score</u>	<u>Ranking</u>	<u>Creat. Group</u>
006	46	1	H
018	42	2	H
008	40	3	H
014	35	4	H
010	34	5	H
028	32	6	H
026	30	7	H
005	26	8½	H
011	26	8½	H
024	24	10	H
009	23	11	H
003	22	12½	H
013	22	12½	H
020	21	14½	H
031	21	14½	L
002	20	16½	H
034	20	16½	L
043	19	18½	L
044	19	18½	L
001	18	20	H
058	17	21	L
033	16	22	L
015	15	25	H
016	15	25	H
019	15	25	H
029	15	25	H
045	15	25	L
012	14	28	H
036	13	29	L
004	12	31	H
007	12	31	H
037	12	31	L
030	11	33½	H
054	11	33½	L
017	10	36½	H
021	10	36½	H
032	10	36½	L
039	10	36½	L
023	9	39½	H
027	9	39½	H
022	8	42	H
035	8	42	L
047	8	42	L
049	7	44½	L
046	7	44½	L
042	6	46	L
040	4	49	L

TABLE IV continued

<u>Subj. #</u>	<u>Fantasy Play Score</u>	<u>Ranking</u>	<u>Creat. Group</u>
050	4	49	L
051	4	49	L
056	4	49	L
059	4	49	L
055	3	52 $\frac{1}{2}$	L
057	3	52 $\frac{1}{2}$	L
041	2	55	L
053	2	55	L
060	2	55	L
038	1	57 $\frac{1}{2}$	L
048	1	57 $\frac{1}{2}$	L
025	0	59 $\frac{1}{2}$	H
052	0	59 $\frac{1}{2}$	L

TABLE V  
RANKINGS OF SUBJECTS IN FANTASY  
PREDISPOSITION

<u>Subj. #</u>	<u>Fant. Predisp. Score</u>	<u>Ranking</u>	<u>Creat. Group</u>
002	4	2½	H
008	4	2½	H
012	4	2½	H
025	4	2½	H
001	3	10	H
003	3	10	H
015	3	10	H
016	3	10	H
019	3	10	H
024	3	10	H
029	3	10	H
031	3	10	L
033	3	10	L
038	3	10	L
039	3	10	L
005	2	26	H
007	2	26	H
009	2	26	H
010	2	26	H
011	2	26	H
013	2	26	H
014	2	26	H
018	2	26	H
021	2	26	H
023	2	26	H
026	2	26	H
027	2	26	H
028	2	26	H
030	2	26	H
032	2	26	L
034	2	26	L
037	2	26	L
043	2	26	L
044	2	26	L
057	2	26	L
058	2	26	L
004	1	47	H
006	1	47	H
017	1	47	H
020	1	47	H
022	1	47	H
035	1	47	L
036	1	47	L
040	1	47	L
041	1	47	L
042	1	47	L
045	1	47	L

TABLE V continued

<u>Subj. #</u>	<u>Fant. Predisp. Score</u>	<u>Ranking</u>	<u>Creat. Group</u>
046	1	47	L
047	1	47	L
048	1	47	L
049	1	47	L
050	1	47	L
051	1	47	L
053	1	47	L
054	1	47	L
055	1	47	L
059	1	47	L
052	0	59	L
056	0	59	L
060	0	59	L

TABLE VI  
RANKINGS OF SUBJECTS IN SOCIAL  
INTERACTION

<u>Subj. #</u>	<u>Social Interac. Score</u>	<u>Ranking</u>	<u>Creat. Group</u>
018	64	1	H
020	61	2	H
011	52	3½	H
014	52	3½	H
003	50	5½	H
033	50	5½	L
010	48	8	H
040	48	8	L
045	48	8	L
024	47	10	H
001	46	11½	H
019	46	11½	H
029	45	13	H
009	44	14	H
002	42	16	H
015	42	16	H
028	42	16	H
026	41	18½	H
031	41	18½	L
007	40	21½	H
042	40	21½	L
044	40	21½	L
050	40	21½	L
006	39	25½	H
021	39	25½	H
030	39	25½	H
032	39	25½	L
013	38	29	H
016	38	29	H
056	38	29	L
012	34	31½	H
036	34	31½	L
004	33	34	H
039	33	34	L
049	33	34	L
034	32	36	L
008	31	38	H
035	31	38	L
051	31	38	L
027	30	41	H
043	30	41	L
058	30	41	L
005	29	43½	H
059	29	43½	L
038	26	45½	L
048	26	45½	L
017	25	47½	H

TABLE VI continued

<u>Subj. #</u>	<u>Social Interac. Score</u>	<u>Ranking</u>	<u>Creat. Group</u>
046	25	47½	L
057	23	49	L
053	22	50	L
047	21	51	L
060	20	52	L
041	19	53	L
037	18	54½	L
054	18	54½	L
023	14	56½	H
055	14	56½	L
022	13	58	H
052	12	59	L
025	1	60	H

TABLE VII  
INTERCORRELATIONS OF VARIABLES IN HIGH CREATIVE GROUP

	Creative Pot.	IQ	Fantasy Play	Fantasy Predis.
Creative Pot.	----			
IQ	.1802	----		
Fantasy Play	.2432	.2425	----	
Fantasy Predis.	.1277	-.0225	-.1009	----
Social Interac.	.1460	.4234**	.5629***	-.0823

\*\*p<.02

\*\*\*p<.01



TABLE VIII  
INTERCORRELATIONS OF VARIABLES IN LOW CREATIVE GROUP

Creative Pot.	Creative Pot.	IQ	Fantasy Play	Fantasy Predis.
Creative Pot.	----			
IQ	.2695	----		
Fantasy Play	.5050***	.3015	----	
Fantasy Predis.	.5579***	.0919	.5550***	----
Social Interac.	.4304**	.2785	.4448**	.3082

\* $p < .05$

\*\* $p < .02$

\*\*\* $p < .01$

A discriminant function analysis on just the high verbal-high figural and low verbal-low figural groups showed that the variables IQ, fantasy play, and social interaction in play successfully classified 80% of the subjects.

A tentative post hoc analysis was then performed to further examine the discriminating power of the previous variables with the addition of fantasy predisposition variable. A stepwise discriminant function analysis showed that fantasy play was the most important variable and IQ was the second most important variable in discriminating between the high verbal-high figural and the low verbal-low figural groups. The other variables did not meet the .10 significance level to be included in the model.

The means and standard deviations for the variables of the high verbal-high figural group are creativity (150.94, 19.17), IQ (123.00, 7.38), fantasy play (20.94, 10.20), social interaction (41.56, 7.42), and fantasy predisposition (2.37, .96). The means and standard deviations for the variables of the low verbal-low figural group are creativity (67.17, 12.94), IQ (113.13, 10.71), fantasy play (8.42, 6.45), social interaction (30.37, 10.15), and fantasy predisposition (1.40, .85).

The second part of the post hoc analysis was a discriminant function analysis combining just fantasy play and IQ, the two most important variables identified by the stepwise discriminant function. The results showed that these two variables correctly classified 80% of the subjects into the high verbal-high figural and the low verbal-low figural groups. Of the 16 subjects in the high-high group, 2 were misclassified into the low-low group. Of the 30 subjects in the low-low group, 7 were misclassified into the high-high group.

## CHAPTER IV

### DISCUSSION

Hypothesis 1 stated that there is a linear relationship between creative potential and the four independent variables, IQ, fantasy play, fantasy predisposition, and social interaction in play. This hypothesis was supported for the low creative group, but not for the high creative group. It is not clear from the results of the multiple regressions if the relationship of the independent variables to creative potential in the high creative group is separate from the linear relationship in the low creative group or whether it is a continuous relationship with a plateau effect at the high levels of creative potential. However, the t tests show that the means for each of the variables are significantly greater for the high group than for the low group. These results suggest that there is a continuous relationship that levels off at the higher level of creative potential.

Hypothesis 2 rank ordered the relative importance of the variables in their influence on creative potential. These variables had significant influence on creative potential only in the low creative group, with fantasy predisposition the most important variable, then social interaction in play. This partially supported hypothesis 2. However, fantasy play was expected to rank higher in importance. Fantasy play does correlate significantly with fantasy predisposition and social interaction in the low creative group, which may explain

why it was not included in the regression model for the low group.

Hypotheses 3, 4, 5, and 6, which stated that the high creatives would exhibit more fantasy play, have higher fantasy predisposition scores, have higher IQ scores, and exhibit more positive social interactions in play than the low creatives, were supported by the results of the t tests.

Hypothesis 7 was also supported by this study. A significant number of individuals were correctly classified into the high verbal-high figural or low verbal-low figural groups based on their IQ, fantasy in play, and social interaction scores. The results of the post hoc stepwise discriminant function showed that fantasy in play and IQ were the most important variables in discriminating between these two groups.

The findings of a correlation between the intelligence estimate and creative potential of .18 for the high creative group and of .27 for the low creative group is consistent with most of the previous research involving elementary-school children and adolescents. The results of the t tests, which showed that the high creative group was higher on intelligence than the low creative group, and of the correlations, which showed that the correlation between creative potential and intelligence was greater in the low group than in the high group, seem to support the previous research findings of a curvilinear relationship between intelligence and creativity.

The finding of a significant difference between the low and high creative groups with respect to amount of positive social interactions during play is consistent with several previous research

studies. Reid, King, and Wickmire (1959) found that creative seventh graders were more sociable than their noncreative peers. Wallach and Kogan (1965) found that elementary-school children high in creativity and intelligence were sought out more by their peers and Cacha (1976) found that creative fifth graders were socially bold.

The results of this study also seem to support the theory of a connection between fantasy play and creative potential. The high creative group did exhibit more fantasy in their play than the low creative group. This is consistent with Dansky's (1980) contention that it is make-believe which mediates the relationship between free play and associative fluency, one of the measures of divergent thinking used in this study. The research by Feitelson and Ross (1973) with kindergarten children and by Hershey and Kearns (1979) with elementary-school children, also supported this connection between fantasy and creativity. Johnson (1976) also found that fantasy play was significantly related to divergent thinking, but only socially interactive fantasy play. Whereas this study did not examine the relative influence of social versus nonsocial fantasy play on creative potential, the results did show that the high creative group exhibited more fantasy and social interactions in their play than did the low creative group and that fantasy play and social interaction were positively correlated in both the high and low creative groups.

The results of this study also showed that fantasy play was significantly correlated with creative potential in the low creative group, but not in the high creative group. This suggests that like IQ, the effect of this variable may be attenuated as one moves into higher levels of creative potential.

Fantasy predisposition, as measured by Singer's questionnaire, was also found to be significantly greater for the high creative group than for the low creative group. It was found to be the most influential variable on the variance of creative potential in the low group. This supports Kuziemski's (1977) finding of a significant positive correlation between imaginative play predisposition and creative thinking in second graders. Although fantasy predisposition is significantly correlated with fantasy in play for the low group, it seems to measure a type of fantasy that is more closely related to creative potential than is the fantasy exhibited in play. This may be symbolic activity or imagery skills which occur outside the play situation. This type of fantasy was found to be related to creativity in high-school students by Schaefer (1969) and in college women by Helson (1965).

The results of this study support the conclusion of Dellas and Gaier (1970) and Arasteh (1968) that the assessment of creative potential in young children should not rely solely on intellectual abilities, but should also include other cognitive and personality factors. The findings suggest that the variables included in this study: IQ, fantasy play, fantasy predisposition, and social interaction in play, are ones that should be considered when attempting to measure creative potential at the preschool level. It also appears that observations of children in their natural environment during free play provide useful sources of information about some of their personality styles.

One practical implication of this study is that the better we understand the complex relationship of cognitive and personality variables to creative potential in young children, the better we will

be able to identify this potential at an early age. This would hopefully allow for the individualizing of educational experiences in order to encourage its development and to prevent its attenuation through lack of use.

One shortcoming of this study is that it excluded those children who fell in the middle range of overall creativity. This made it difficult to obtain a clear view of the relationship of the independent variables across the range of creative potential. This study also focused primarily on overall creative potential and did not examine in depth the relationship of these variables to the different types of creative potential, verbal and figural. Further research is needed in this area.

Another shortcoming of this study is that it includes only female subjects of a restricted age range. Thus, the conclusions of this study should not be generalized to all children because the results may be different for males and for both sexes at different developmental levels. Further research is needed to examine the relationship of IQ, fantasy play, fantasy predisposition, and social interaction in play for both sexes at different age levels. A longitudinal study would be the optimum method to identify the characteristics in young children that related to creative performance in adulthood.

Gardner (1980) has attempted to describe the developmental course of children's drawings, in order to look at them as predecessors of artistic creativity in adults. He describes the period of three

to five years of age as the "summit of artistry" when the child's interest is in free graphic expression. However, in the early school years the child seems to become more concerned with gaining technical competence and achieving realism in drawing. The focus on technical skills in middle childhood is useful in later years because the artist must be able to communicate his art's meaning to others. Thus, the early freedom and exploration characteristic of the child, along with the technical ability to produce the exact image desired and the capacity to plan ahead and follow through with a project over a period of time are seen by Gardner as prerequisites of artistic creativity. Whereas this study did not look at children's drawings specifically, the findings do seem to support Gardner's idea that the seeds of artistic achievement are in the playful and exploring activities of the young child.

This study did show that there are individual differences in the variables measured at an early age, which lends support to the idea that predispositions for certain traits and abilities may be inherent. However, research needs to be extended to even younger ages to find if there are variables in infancy which may be related to, or contribute to the development of, the ability to fantasize and to be creative in later years.



## APPENDIX

TABLE IX  
RAW DATA FOR THE HIGH  
CREATIVE GROUP

Subj. #	Creativity Scores			IQ	Fant. Play	Fant. Predisp.	Social Interac.
	Verbal	Figural	Total				
1	71	120	191	129	18	3	46
2	64	119	183	129	20	4	42
3	62	105	167	119	22	3	50
4	90	76	166	125	12	1	33
5	43	118	166	114	26	2	29
6	69	93	162	114	46	1	39
7	70	90	160	132	12	2	40
8	43	114	157	129	40	4	40
9	58	96	154	119	23	2	44
10	71	82	153	125	34	2	48
11	60	89	149	117	26	2	52
12	60	83	143	122	14	4	34
13	68	72	140	125	22	2	38
14	67	71	138	110	35	2	52
15	73	65	138	130	15	3	42
16	71	66	137	120	15	3	38
17	61	74	135	125	10	1	25
18	53	82	135	135	42	2	64
19	90	42	132	100	15	3	46
20	46	85	131	120	21	1	61
21	67	63	130	111	10	2	39
22	73	56	129	119	8	1	13
23	72	54	126	116	9	2	14
24	63	60	123	135	24	3	47
25	72	50	122	82	0	4	1
26	74	43	117	125	30	2	41
27	60	52	112	122	9	2	30
28	60	47	107	112	32	2	42
29	70	34	104	144	15	3	45
30	69	29	98	110	11	2	39

TABLE X

RAW DATA FOR THE LOW  
CREATIVE GROUP

Subj. #	Creativity Scores			IQ	Fant. Play	Fant. Predisp.	Social Interac.
	Verbal	Figural	Total				
31	35	58	93	112	21	3	41
32	40	51	91	119	10	2	39
33	42	45	87	114	16	3	50
34	29	58	87	120	20	2	32
35	33	49	82	116	8	1	31
36	44	37	81	130	13	1	34
37	26	49	75	122	12	2	18
38	22	51	73	92	1	3	26
39	32	40	72	107	10	3	33
40	30	40	70	119	4	1	48
41	30	39	69	115	2	1	19
42	32	37	69	119	6	1	40
43	30	38	68	118	19	2	30
44	28	40	68	110	19	2	40
45	28	40	68	107	15	1	48
46	30	36	66	120	7	1	25
47	30	34	64	112	8	1	21
48	33	30	63	110	1	1	26
49	34	28	62	110	7	1	33
50	27	35	62	129	4	1	40
51	22	40	62	101	4	1	31
52	22	39	61	90	0	0	12
53	25	36	61	104	2	1	22
54	23	37	60	110	11	1	18
55	28	30	58	119	3	1	14
56	24	33	57	126	4	0	38
57	25	31	56	129	3	2	23
58	24	24	48	122	17	2	30
59	17	25	42	100	4	1	29
60	20	20	40	92	2	0	20

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## BIOGRAPHICAL SKETCH

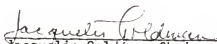
Deanna Bough Brooks was born in Bedford, Indiana, on November 3, 1950. She attended public school through the fifth grade in Bedford before moving with her family to Fort Myers, Florida, in 1962. She graduated from Fort Myers Senior High School in 1968 after which she attended the University of Florida. She received a Bachelor of Arts degree with highest honors in psychology from the University of Florida in 1972 and was also elected to membership in Phi Beta Kappa.

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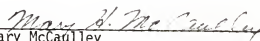
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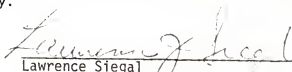
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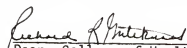
  
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